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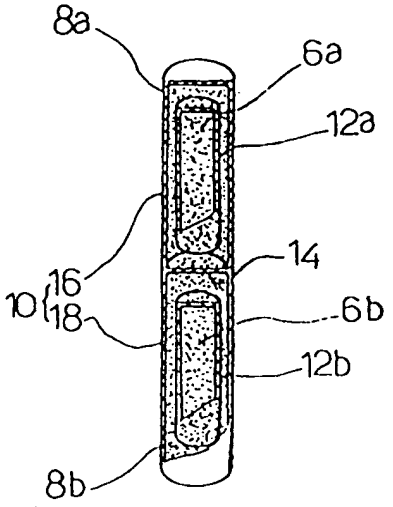
(54) Title: MULTI-LIGHT EMITTING CHEMI-LIGHT

(57) Abstract

This invention relates to a multi-light emitting chemi-light. According to the invention, there is provided a chemi-light which includes a flexible and light-transmittable tube (6) which contains reactants (6) and ampule (12) in which other reactants (8) are contained, wherein said tube (10) is partitioned by at least one partition (14) to form at least two chambers (16, 18), and each of said chamber (16, 18) contains reactant (6a) and reactant (6b) respectively, and each of said chamber (16, 18) also contains each ampule (12a, 12b), and said ampules (12a, 12b) contain reactant (8a) reactable with said reactant (6a) and reactant (8b) reactable with said reactant (6b) respectively to emit the different color lights.



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MULTI-LIGHT EMITTING CHEMI-LIGHT

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to a multi-light emitting chemi-light, and in particular to a chemi-light which emits light in muitiple colors so that it looks more distinctive to eyes of people.

(Background Art)

'Chemi-luminescence' or 'Chemical light-emitting' is a reaction in which a reactant transitting from an exited state to a ground state emits a light energy. This reaction could be regarded as a backward reaction of photochemical reaction. In chemi-luminescence, atoms or molecules which are electrically exited during the chemical reaction come to vibrate or collide to other adjacent ones, and these unstable atoms or molecules should emit the light. By selecting the reacting substances, or by adding different fluorescers or by mixing two or more fluorescers, the chemi-light would emit a predetermined-colored lights.

Recently, the chemi-luminescence are practically applied for fishing, decoration and other leisure goods in the name of 'chemi-light' or 'chemical light'. Fig. 1 shows the chemi-light(5) attached to float(4) of fishing rod(2). This light-emitting chemi-light(5) makes it easy for a fisherman to keep his eyes on the float(4) at night.

As shown in Fig. 2, the chemi-light(5) is composed of a flexible and light-transmittable tube(10) containing a predeterminded liquid reactant A(6) and glass ampule(12). This ampule(12) also contains other liquid reactant B(8). The ampule(12) is dipped in reactant A(6). If the tube(10) is bent by fingers, the ampule(12) is to be broken. Then, the liquid reactant A(6) contained in the tube(10) and the liquid reactant B(8) contained in the ampule(12) are to be mixed to each other, and start to emit light. This chemi-light is now used for lighting of the outdoors leisure and military purposes as well as for night fishing goods.

But, the above mentioned chemi-light is formed by one tube and one ampule contained in said tube. Therefore, each of the tube and ampule should contain one kind of reactant or reactant mixture, so that

the chemi-light should have one combination of reactants. As a result, the chemi-light may issue one color light. That is, it should be impossible to change or diversify the color pattern of light in one chemi-light. Therefore, the chemi-light should look monotonous and less distinguishable.

SUMMARY OF THE INVENTION

The object of this invention is to solve the above mentioned problems by providing a new chemi-light which could emit multi-color light to change and diversify the light-emitting patterns and make it look colorful and more distinguishable to the eyes of person.

The above object is achieved by the invention of chemi-light which includes a flexible and light-transmittable tube(6) which contains reactants(6) and ampule(12) in which other reactants(8) are contained, wherein said tube(10) is partitioned by at least one partition(14) to form at least two chambers(16,18), and each of said chambers(16,18) contains reactant(6a) and reactant(6b) respectively, and each of said chambers(16,18) also contains each ampules(12a,12b), and said ampules(12a,12b) contain reactant(8a) reactable with said reactant(6a)

and reactant(8b) reactable with said reactant(6b) respectively to emit the different color lights.

Brief Description of the drawings.

The invention will be descibed in more detail with reference to the drawings in which ;

Fig. 1 is a view showing an exemplary use of the conventional chemi-light.

Fig. 2 is a partially broken view of the conventional chemi-light tube.

Fig. 3 is a partially broken view of the embodiment according to the invention.

Description of the preferred embodiment

Referring to Fig. 3, the chemi-light(5) comprises flexible and transparent or light-transmittable plastic tube(10) which is partitioned by a diaphramic partition(14) to form two chambers(16,18). The shape of said tube(10) or the location of said partition(14) should be properly determined. Each chamber(16,18) contains liquid reactant(16a) and liquid reactant(16) repectively. Also, Each chamber(16,18) contains each glass

ampule(12a, 12b). Said ampules(12a,12b) are dipped in said reactants(6a,6b) respectively. And these ampules(12a,12b) contain other reactant(8a, 8b) respectively.

The combinations of said reactants are properly selected so that the color of light emitted by mixing of the reactant(6a) and reactant(8b) is visually distinctive and differentiated from the color of light emitted by mixing of the reactant(6b) and reactant(8b). For this purpose, the ingredients of reactant or added fluorescers should be differentiated.

If necessary, the tube(10) might be partitioned into three or more chambers, and each of the chambers might have each ampule. The combination of reactants in a chamber and the one in the corresponding ampule should be differentiated to achieve more colorful and more various light patterns.

According to the invention as described above, the tube(10) of chemi-light(5) has a case of plastic tube(10) which is partitioned into two or more chambers, and combinations of reactants properly selected to emit different colored lights should be contained in each chamber and the corresponding ampule. In order to lighten the chemi-light, all of

these ampule(12a,12b) in each chamber(16,18) should be broken by bending the tube(10). Then, by mixing of the different combination of reactants, each chamber(16,18) will emit the different color lights. As a result, the chemi-light could issue more colorful and more distinctive multi-colored light. The multi-colored pattern according to the invention might be applicable for the purpose of signal communication.

CLAIMS

1. Chemi-light which includes a flexible and light-transmittable tube(6) which contains reactants(6) and ampule(12) in which other reactants(8) are contained, wherein said tube(10) is partitioned by at least one partition(14) to form at least two chambers(16,18), and each of said chambers(16,18) contains reactant(6a) and reactant(6b) respectively, and each of said chambers(16,18) also contains each ampules(12a,12b), and said ampules(12a,12b) contain reactant(8a) reactable with said reactant(6a) and reactant(8b) reactable with said reactant(6b) respectively to emit the different color lights.

FIG. 1

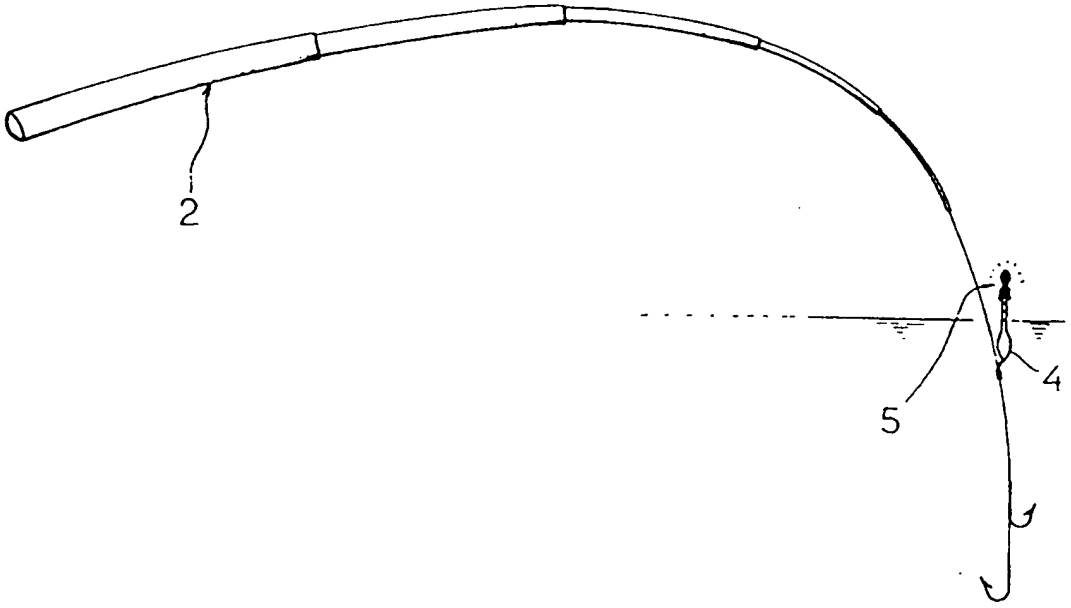


FIG. 2

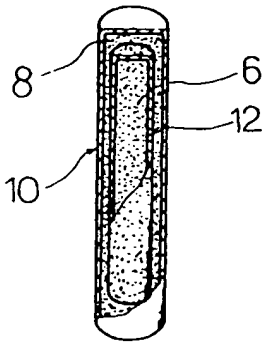
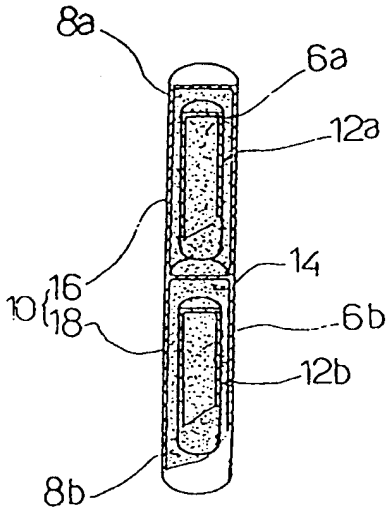


FIG. 3



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR 96/00210

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: F 21 K 2/06; A 01 K 85/01, 75/02
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC6: F 21 K 2/00; A 01 K 85/00, 75/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPODOC, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 638 584 A (LINDSAY) 27 January 1987 (27.01.87), fig.2A-2C; column 6, lines 64-67; column 7, lines 3-21.	1
X	US 5 390 086 A (HOLLAND) 14 February 1995 (14.02.95), fig.7; abstract; column 5, lines 29-58; column 6, lines 8-14.	1
X	US 5 383 100 A (KIKOS) 17 January 1995 (17.01.95), fig.8; abstract; column 3, lines 8-52.	1
P,X	US 5 508 893 A (NOWAK) 16 April 1996 (16.04.96), fig.4,5; abstract; column 3, lines 14-36; column 2, lines 23-29.	1
A	US 5 158 349 A (HOLLAND) 27 October 1992 (27.10.92), fig.3, abstract; column 4, lines 9-24.	1

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
28 March 1997 (28.03.97)	16 April 1997 (16.04.97)
Name and mailing address of the ISA/AT AUSTRIAN PATENT OFFICE Kohlmarkt 8-10 A-1014 Vienna Facsimile No. 1/53424/535	Authorized officer Kral Telephone No. 1/53424/335

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INTERNATIONAL SEARCH REPORT
Information on patent family members

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In Recherchenbericht angeführtes Patentdokument Patent document cited in search report Document de brevet cité dans le rapport de recherche	Datum der Veröffentlichung Publication date Date de publication	Mitglied(er) der Patentfamilie Patent family member(s) Membre(s) de la famille de brevets	Datum der Veröffentlichung Publication date Date de publication
US A 4638584	27-01-87	keine - none - rien	
US A 5390086	14-02-95	US A 5222797	29-06-93
US A 5383100	17-01-95	keine - none - rien	
US A 5508893	16-04-96	keine - none - rien	
US A 5158349	27-10-92	keine - none - rien	

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